DESCRIPTIONS OF SOME NEW SPECIES OF PULMONATE MOLLUSCA FROM AUSTRALIA AND THE SOLOMON ISLANDS.

By J. C. Cox, M.D., F.L.S.

(Plates xx. and xxi.)

Helix (Hadra) oscarensis, n.sp.

(Pl. xx., figs. 6 and 7, enlarged twice).

Shell lenticular; of a dull lustrous opaque cretaceous pale cream colour, except the three apical whorls, which are of a dark yellowish-brown hue, and this deepening of colour in a less degree is manifested in a few irregular-sized spaces across the whorls (not sufficiently shown in fig. 6). Whorls six; very gradually increasing in size; irregularly, but closely, rather coarsely, transversely, arcuately striate, with lines of growth becoming less distinct on the three apical whorls as they approach the apex; the whorls are flatly slanting, not so rounded as fig. 6 would lead to suppose, smoother below the periphery of the last whorl than above; last whorl sub-acutely keeled at the periphery, the keel is white and opaque, margining the periphery of the last whorl before reaching the peristome, causing it to be rather acutely angled; immediately below the peripheral carinal edge of the last whorl, the colour of the shell is darker than the rest of the lower half of the whorl. With the mouth away from one, as shown in fig. 7, the shell is seen to have a deep open umbilicus, more so than is represented in fig. 7, about one-third of it being overlapped by an expanded columella; the peristome is simple, everted and slightly expanded; aperture roundly lunate, darker within than at the internal edge;

upper margin of the peristome inserted into the carinal margin of the periphery of the last whorl; columella triangularly expanded, white and smooth, no trace of a callous expansion between the ends of the peristome on the body whorl. The suture of the whorls is well impressed, margined above with a faint opaque white line, a continuation of the carinal margin of the periphery. The apex shows no signs of a granular sculpture. Diam. maj. 20, min. 17, alt. 14 mm.

Hab.—The Oscar Ranges, 20 miles from the Barrier Ranges, West Australia *(Froggatt)*.

Type in the Macleay Museum.

Helix (Hadra) derbyi, n.sp.

(Pl. xx., figs. 4 and 5.)

Shell depressedly globose; whorls $5\frac{1}{2}$ to 6, very gradually increasing, with a moderately large open deep umbilicus, more so than is represented in fig. 5; the periphery of the last whorl is smoothly rounded to the aperture; colour light brown, marbled with lighter patches, but not regularly across the whorls; surface strongly but irregularly transversely striated with curved lines of growth, the convexity of the curves being upwards. Apex very slightly raised; last whorl deflected at its termination; the periphery is margined by a narrow pale band, but in no way carinated; aperture elongately lunate, the right margin inserted below the centre of the periphery of the preceding whorl, the columellar margin with a slight expansion at its insertion, the edge of the peristome very slightly everted and thickened. Apical whorl quite smooth. The base of the shell is convex, more faintly striated than the upper surface, of a lighter colour and not marbled. Whorls rounded, suture deep and well defined, but not margined. Diam. maj. 11, min. 9, alt. 6 mm.

Hab.—The Derby District, Barrier Ranges, Western Australia *(Froggatt)*.

Type in the Macleay Museum.

Bulimus (Placostylus) hobsoni, n.sp.

(Pl. xx., figs. 2 and 3.)

Shell deeply and openly rimate, comparatively thin and light for its size, translucent, the sculpture and markings are very visible on the body whorl through the wall of the shell by transmitted light; shining and lustrous, of a light reddish-brown colour, the whorls of the spire becoming lighter in shade and more of a pinkish-brown; ornamented with many irregularly sized and irregularly distributed chestnut-coloured tentoriform markings; whorls slightly inflated, causing the suture to assume an impressed character. Suture margined by a narrow opaque slightly raised knotted selvaged margin (not smooth and straight as represented in the figures); whorls longitudinally irregularly marked with lines of growth and transversely subcostately ridged with rather coarse raised undulating lines, which frequently anastomose (a character quite omitted in the figures, but which is very characteristic), becoming much less distinct on the whorls beyond the body whorl, till, on the third whorl from it, they are almost invisible, and are gradually replaced by a granular punctation, which increases in distinctness quite to the apex; these granular punctures are disposed in two distinct transverse slanting rows, one running from right to left, the other from left to right. Aperture oblong-ovate, of a pinkish-brown colour; peristome only slightly thickened and everted, pinkish-brown throughout, except at the columella which is of an opaque white only very faintly tinged with pink-brown; columella broadly expanded and dividing at its insertion, as in all the shells of this group, into two processes, the outer and smallest gradually blending with a thin transparent glassy callus, which runs towards the insertion of the upper end of the peristome, which is rather arched out from the side of the shell as it leaves its insertion (more so than is represented in the figure), the larger process of the divided columella enters spirally the interior of the shell. In the several specimens of this species which I have seen, there is no disposition to the formation of a

callosity or tooth on the body whorl in the aperture between the inserted ends of the peristome. Length 58, breadth 27 mm.

Hab.— Malanta Island, Solomon Islands *(Hobson)*.

Type in my collection.

When first presented with specimens of this shell, I was inclined to look upon it only as a variety of my *Bulimus scotti*, described in the Proc. Zool. Soc. of London of 1873, page 152; but the examination of more recent additions to my collection, and of the specimens in Mr. Hodgson's cabinet indicates that they are worthy of separation. It is difficult to light on characters of this fine group of shells which are specially occupants of the South Pacific Islands, not including New Guinea. Their great holdfast appears to be the Fiji and Solomon groups proper, a few coming from the New Hebrides and other groups. This is a question which is well worthy of being worked out. The group is in all instances characterised by granular punctation of the apex, but the punctation is not alike distributed in all cases; as a rule, it is in transverse rows. Another character quite separates the group into two divisions; one is smooth, only showing longitudinal lines of growth on the body whorl, the other division is invariably transversely sculptured, with more or less straight rugæ, in some instances taking on more the character of lineations than of ridges.

HEDLEYA MACLEAYI, gen. et sp.nov.

(Pl. XXI., figs. 2, 5, 8, and 10.)

Shell dextral, imperforate, thin, translucent, elongate, subcylindrical, slightly tapering and blunt at the apex. Colour amber. Whorls $8\frac{1}{2}$, tumidly inflated, gradually increasing, the last comprising nearly one-third of the total length. Sculpture, numerous, tolerably regular, close, slightly curved, scarcely oblique, sharp, erect ribs, of which about 45 ornament the final whorl; they are not continuous from whorl to whorl, do not anastomose, and are separated by smooth interstices of two or three times their breadth; on the upper whorls these ribs grow weaker and closer, until they fade away on the second and third whorls; across the ventral

surface of the body whorl a deep dint (as of a groove worn by a rope in wood) extends obliquely for a quarter of the circumference of the shell and occupies the central third of the space between the suture and the insertion of the columella. Suture deeply impressed. Apex smooth, depressed, first whorl discoidal, first two and a-half hemispherical. Aperture oblique, effuse anteriorly, in outline distorted rhomboid, square anteriorly (not rounded as in the figure), angled posteriorly; peristome strongly thickened and reflected throughout, callus on body whorl thin, transparent, not defined at its limit and would scarcely be perceptible but for the microscopically granulated surface which it shares with the columella; columella straight, continued from the base in the direction of the axis of the shell, then sharply doubling by a sigmoid flexure around the orifice of the anterior canal; this canal presents exteriorly an arched ridge parallel to the columellar margin and divided therefrom by a deep and narrow groove resembling an umbilical crevice; the position of the obsolete posterior canal is marked by a small entering callous ridge (not shown in my illustration) near the posterior angle of the aperture. Length $8\frac{1}{4}$, breadth 2 mm.

Hab.—Cairns, North Queensland *(Froggatt).*

Type in the Macleay Museum and in my collection.

Generic characters should be derived from more than one species and from more knowledge of the mollusc than the naked shell affords. Awaiting anatomical details of the animal and the discovery of fresh species in the unexplored wilds of Northern Queensland, Papua, and Malaysia, I will leave conchological students to construct a generic diagnosis, if they require one, from the foregoing description of the type. Merely will I premise that *Hedleya*, so-called in compliment to my friend Mr. C. Hedley, F.L.S., is undoubtedly an aberrant member of the Pupinidæ, as indicated by its anterior and posterior canals; whilst their unusual position and development, and especially the peripheral scrobiculation on the body whorl, effectually sunder it from all known forms.

I have to apologise for the illustrations I offer of this shell, which are far from good, and should be interpreted with the corrections conveyed in the description. The outline, fig. 10, represents the shell of the natural size; fig. 5 is magnified three, and figs. 2 and 8 six diameters, respectively.

The large central figure on Pl. xx., fig. 1, is the animal of *Bulimus MacConnelli*, Reeve.

Fig. 9 on Pl. xxi. is a very faithful representation of the animal of *Cœliaxis australis*, Forbes, = *Balea australis*, Forbes.

Figs. 4 and 7 are enlarged figures of the young state of *Cœliaxis* before decollation has occurred. I wish to draw special attention to the enlargement of the second whorl in this stage of development. I find from observation that it is this enlargement which first shows signs of dissolution and which ends in decollation.

The carbonate of lime, of which this thickened whorl is composed, is more exposed to the carbonic acid held in solution in the damp localities which this species inhabits, than the other whorls are; its prominence causes the epidermis to be early worn off it; being exposed, the carbonic acid in solution more readily acts on the insoluble carbonate of lime composing it, and converts the insoluble carbonate into a soluble bicarbonate. The erosion, as far as I have been able to observe from specimens kept in a box of damp sand, never begins in the apex; the apex really drops off when this nodose second whorl becomes dissolved. What purpose this enlargement of the second whorl serves in the economy of the young is difficult to conjecture; it may be that its increased weight in the early developmental stage would cause it to lie flat beside the animal, and in this way would be less exposed to injury as the animal glides about; or it may be for increased strength for protection.